

Dust-/Splash-/Water-proof

RoboCylinder Rod Type with
Battery-less Absolute Encoder

RCP5W-RA Series

**ROBO
CYLINDER**



Specification Table

Type	External view	Actuator width (mm)	Stroke (mm)	Ball screw lead (mm)	Max. speed (mm)	Max. payload (kg)		Page
						Horizontal	Vertical	
RA6C		 65mm	50~400	12	560<500>*	20	3	→ P.5
				6	360*	40	8	
				3	180*	50	16	
					70	—	30	
RA7C		 75mm	50~500	16	560<400>*	40	7	→ P.7
				8	340<280>*	50	15	
				4	170<140>*	70	25	
					80	—	45	
RA8C		 88mm	50~700	20	480<360>	24	4	→ P.9
				10	240<200>*	48	32	
				5	120<100>*	80	56	
RA10C		 108mm	50~800	10	200<130>	64	64	→ P.11
				5	100	120	80	
				2.5	50	240	120	

*In case the ambient temperature is 5° or less, the max. speed decreases. Please refer to the page featuring each actuator type.

The values in <> apply when the actuator is used vertically.

Model Number

RCP5W — [] — **WA** — [] — [] — [] — [] — [] — [] — []

Series Type code Encoder type Motor type Ball screw lead Stroke Applicable controller Cable length Options

WA	Battery-less absolute
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RA6C	Actuator width 65mm Coupling type
RA7C	Actuator width 75mm Coupling type
RA8C	Actuator width 88mm Coupling type
RA10C	Actuator width 108mm Coupling type

42P	42□ motor
42SP	42□ high-thrust motor
56P	56□ motor
56SP	56□ high-thrust motor
60P	60□ motor
86P	86□ motor

2.5	Lead 2.5mm
3	Lead 3mm
4	Lead 4mm
5	Lead 5mm
6	Lead 6mm
8	Lead 8mm
10	Lead 10mm
12	Lead 12mm
16	Lead 16mm
20	Lead 20mm

50	50mm
800	800mm

(Can be set in 50-mm increments)

P3	PCON-CA MSEP MSEL
P4	PCON-CFA

N	No cable
P	1m
S	3m
M	5m
X□□	Specified length
R□□	Robot cable

A1	Cable exit from left
A3	Cable exit from right
AT	Cable exit from top
B	Brake
FL	With flange
FT	With foot bracket
NM	Non-motor side spec.

* The available selections for encoder type, motor type, ball screw lead and stroke vary depending on the actuator type. For details, please refer to the page featuring each actuator type.

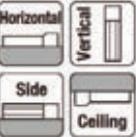
RCP5W-RA6C

RoboCylinder Water-proof rod type
24-V Pulse motor

Actuator width: 65 mm

Model Specification Items	RCP5W — RA6C — WA — <input type="checkbox"/>
	Series — Type — Encoder type — Motor type — Lead — Stroke — Applicable controller — Cable length — Options
	WA: Battery-less absolute specification 42P: Pulse motor, size 42 <input type="checkbox"/> 42SP: High-thrust pulse motor, size 42 <input type="checkbox"/>
	12: 12mm 6: 6mm 3: 3mm
	50 : 50mm 400 : 400mm (every 50-mm)
	P3: PCON-CA MSEP MSEL
	N: None P: 1m S: 3m M: 5m X <input type="checkbox"/> <input type="checkbox"/> : Specified length R <input type="checkbox"/> <input type="checkbox"/> : Robot cable
	Refer to the option list below. * If the high-thrust pulse motor is selected, the actuator comes standard with option B (Brake).

Radial Load Applicable



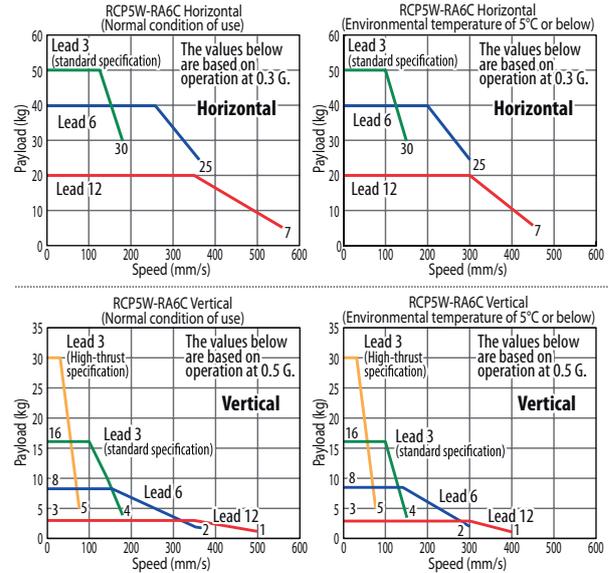
* Depending on the model, there may be some limitations to using the vertical mount position.



- (1) The maximum payload is the value when operated horizontally and vertically at 0.3G and 0.5G, respectively. Note that raising the acceleration causes the payload to drop.
- (2) The horizontal payload is calculated by assuming that an external guide is also used.
- (3) The high-thrust specification is designed exclusively for vertical operation. It comes standard with a brake.
- (4) The cable joint connector is not splash-proof, so install the connector in a location where it will not come in contact with water.

Correlation Diagrams of Speed and Payload

Due to its pulse motor characteristics, the RCP5 series provides lower payload at higher speed. Check the tables below to see if the desired speed and payload can be achieved.



Actuator Specifications

Leads and Payloads

Model number	Lead (mm)	Maximum payload		Maximum push force (N)	Positioning repeatability (mm)	Stroke (mm)
		Horizontal (kg)	Vertical (kg)			
Standard specification	RCP5W-RA6C-WA-42P-12- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	20	3	93	±0.02	50 to 400 (in 50-mm increments)
	RCP5W-RA6C-WA-42P-6- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	40	8	185		
	RCP5W-RA6C-WA-42P-3- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	50 (*1)	16	370		
High-thrust specification	RCP5W-RA6C-WA-42SP-3- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/> -B	-	30	590		

Legend Stroke Cable length Options

(*1) 40kg for disabled high-output setting.

Stroke and Maximum Speed (unit: mm/s)

Lead (mm)	High-output setting	50 (mm)	100 ~ 400 (in 50-mm increments)
12	Enabled	500 [450<400>]	560<500> [450<400>]
	Disabled	500<400>	
6	Enabled	360 [300]	
	Disabled	250<250>	
3	Enabled	180 [150]	
	Disabled	125<125>	
3 (High-thrust)	Enabled	<70> [<70>]	
	Disabled	<60>	

*The values in <> apply when the actuator is used vertically.
*The values in [] apply when the actuator is used at an environmental temperature of 5°C or below.

Cable length

Type	Cable symbol
Standard type	P (1m)
	S (3m)
	M (5m)
Special length	X06 (6m) ~ X10 (10m)
	X11 (11m) ~ X15 (15m)
	X16 (16m) ~ X20 (20m)
Robot cable	R01 (1m) ~ R03 (3m)
	R04 (4m) ~ R05 (5m)
	R06 (6m) ~ R10 (10m)
	R11 (11m) ~ R15 (15m)
	R16 (16m) ~ R20 (20m)

Options

Name	Option code	See page
Cable exit from the left side face	A1	P4 (or refer to the RCP5 rod type manual)
Cable exit from the right side face	A3	
Cable exit from the top face	AT	
With flange	FL	
With foot bracket	FT	
Non-motor side specification	NM	

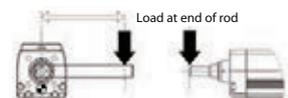
*The high-thrust specification comes standard with a brake.

Actuator Specifications

Item	Description
Drive system	Ball screw ø10mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Rod	ø22 stainless steel pipe
Non-rotating accuracy of rod (*1)	±0 deg
Allowable load/allowable torque at end of rod	Refer to page 15 (or to the RCP5 rod type manual)
Lost offset distance at end of rod	100mm or less
Protective structure	IP67
Ambient operating temperature, humidity	0 to 40°C, 85% RH or less (Non-condensing)

(*1) Rod's angular displacement in rotational direction with no applied load is shown.

Offset distance at end of rod (100mm or less)



Dimensional Drawings

CAD drawings can be downloaded from the website.

www.robotcylinder.de

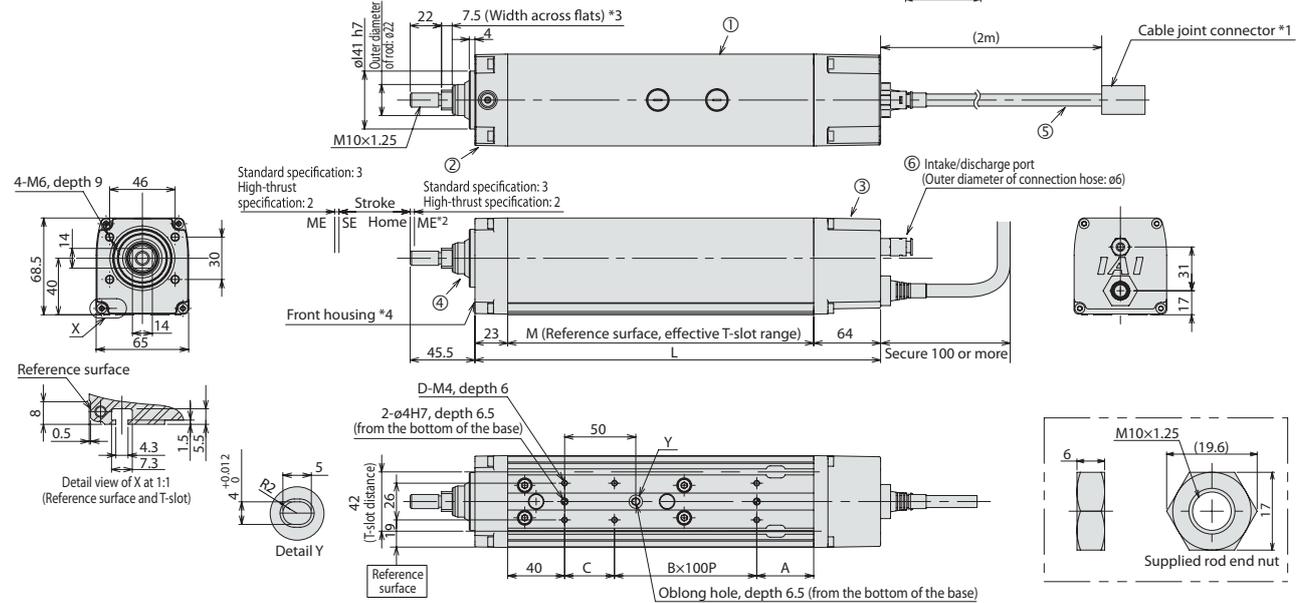
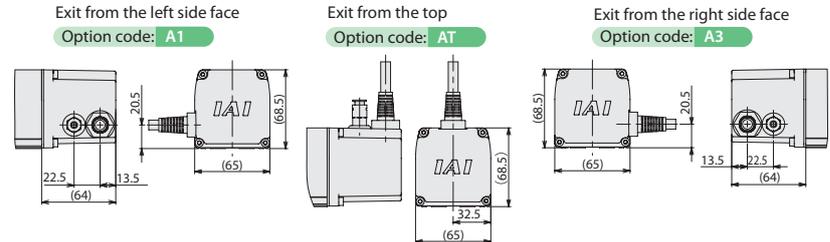
2/3D CAD

- *1 Connect the motor and encoder cables.
- *2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures and objects.
- *3 The orientation of the width across flats varies from one product to another.
- *4 When installing the actuator using the front housing or flange, make sure the actuator does not receive any external force

Materials of Key Components

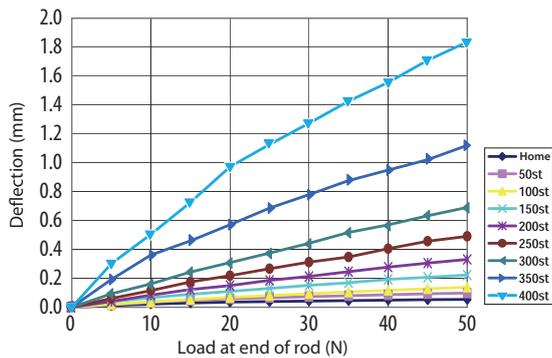
① Frame	Aluminum extrusion material (A6063SS-T5 or equivalent) with white alumite coating
② Front bracket	Aluminum die-cast
③ Rear cover	Aluminum die-cast
④ Rod	Stainless steel pipe (SUS304 or equivalent), polished + hard chrome plated
⑤ Actuator cable	Polyvinyl chloride (PVC)
⑥ Intake/exhaust port	Polyphenylene sulfide (PPS)

Cable Exit Direction Option



Rod Deflection of RCP5W-RA6C (Reference Values)

(The graph below plots deflection as measured by installing the actuator vertically and applying a force to the rod from one side.)



Dimensions and Mass by Stroke

	Stroke	50	100	150	200	250	300	350	400
L	Without brake	302	352	402	452	502	552	602	652
	With brake (*)	363	413	463	513	563	613	663	713
A	Without brake	40	40	40	40	40	40	40	40
	With brake (*)	101	101	101	101	101	101	101	101
B		1	1	2	2	3	3	4	4
C		35	85	35	85	35	85	35	85
D		6	6	8	8	10	10	12	12
M	Without brake	215	265	315	365	415	465	515	565
	With brake (*)	276	326	376	426	476	526	576	626
Allowable static load at end of rod (N)		65.6	51.2	41.7	34.9	29.8	25.7	22.4	19.7
	Load offset 0 mm	32.4	23.6	18.1	14.4	11.6	9.5	7.7	6.2
Allowable dynamic load at end of rod (N)		25.6	19.7	15.7	12.7	10.4	8.6	7.1	5.7
	Load offset 100 mm	6.6	5.2	4.3	3.7	3.2	2.8	2.6	2.3
Allowable static torque at end of rod (N-m)		2.6	2.0	1.6	1.3	1.0	0.9	0.7	0.6
Allowable dynamic torque at end of rod (N-m)		2.6	2.0	1.6	1.3	1.0	0.9	0.7	0.6
		2.6	2.0	1.6	1.3	1.0	0.9	0.7	0.6
Mass (kg)	Without brake	3.2	3.6	3.9	4.3	4.7	5.1	5.5	5.9
	With brake (high-thrust spec.)	3.7	4.1	4.4	4.8	5.2	5.6	6.0	6.4

(*) The dimensions of the high-thrust specification include the brake.

Applicable Controllers

The RCP5W series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Model number	Max. number of controlled axes	Maximum number of positioning points	Input power	Reference page
Positioner type (High-output specification)		PCON-CA-42④WAI①-2-0	1	512 points	DC24V	Refer to the PCON catalog.
Pulse train type (High-output specification)		PCON-CA-42④WAI-PL⑤-2-0		768 points		
Field network type (High-output specification)		PCON-CA-42④WAI③-0-0		3 points		
Solenoid valve multi-axis type (PIO specification)		MSEP④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯⑰⑱⑲⑳㉑㉒㉓㉔㉕㉖㉗㉘㉙㉚㉛㉜㉝㉞㉟㊱㊲㊳㊴㊵㊶㊷㊸㊹㊺㊻㊼㊽㊾㊿	4 (4 when high-output enabled) LC: 6 (3 when high-output enabled)	256 points	Single-phase AC 100V~230V	Refer to the MSEP catalog.
Positioner multi-axis type (Field network specification)		MSEP④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯⑰⑱⑲⑳㉑㉒㉓㉔㉕㉖㉗㉘㉙㉚㉛㉜㉝㉞㉟㊱㊲㊳㊴㊵㊶㊷㊸㊹㊺㊻㊼㊽㊾㊿				
Program control multi-axis safety category type		MSEL-PG-1-42PWAI①-2-4	4	30000 points	Single-phase AC 100V~230V	Refer to the MSEL catalog.
Program control multi-axis safety category type (w/ network board)		MSEL-PG-1-42PWAI③-0-4				

*Above MSEL models are for single-axis specification.

*The high output enabled operation is only available when the „High-output setting specs“ is selected in the MSEP-C/LC.

① I/O type (NP/PN) *② Number of axes *③ Field network specification code *④ C or LC *⑤ N (NPN specification) or P (PNP specification) code *⑥ P (standard specification) or SP (high-thrust specification) code

RCP5W-RA7C

RoboCylinder Water-proof rod type
24-V Pulse motor

Actuator width: 75 mm

Model Specification Items	RCP5W	RA7C	WA							
	Series	Type	Encoder type	Motor type	Lead	Stroke	Applicable controller	Cable length	Options	
			WA: Battery-less absolute specification	56P: Pulse motor, size 56 56SP: High-thrust pulse motor, size 56	16: 16mm 8: 8mm 4: 4mm	50 : 50mm 500 : 500mm (every 50-mm)	P3: PCON-CA MSEP/MSEL P4: PCON-CFA	N: None P: 1 m S: 3 m M: 5 m X <input type="checkbox"/> : Specified length R <input type="checkbox"/> : Robot cable	Refer to the option list below. *If the high-thrust pulse motor is selected, the actuator comes standard with option B (Brake).	

*The PCON-CFA is designed exclusively for the high-thrust specification.

Radial Load Applicable



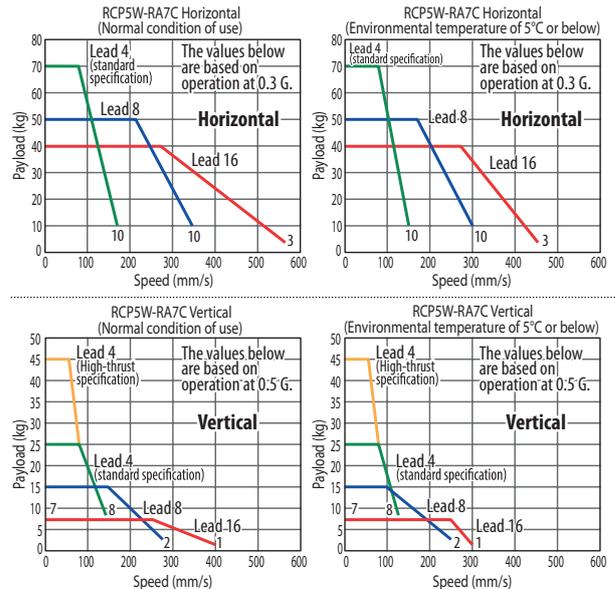
* Depending on the model, there may be some limitations to using the vertical mount position.



- (1) The maximum payload is the value when operated horizontally and vertically at 0.3G and 0.5G, respectively. Note that raising the acceleration causes the payload to drop.
- (2) The horizontal payload is calculated by assuming that an external guide is also used.
- (3) The high-thrust specification is designed exclusively for vertical operation. It comes standard with a brake.
- (4) The cable joint connector is not splash-proof, so install the connector in a location where it will not come in contact with water.

Correlation Diagrams of Speed and Payload

Due to its pulse motor characteristics, the RCP5 series provides lower payload at higher speed. Check the tables below to see if the desired speed and payload can be achieved.



Actuator Specifications

Leads and Payloads

Model number	Lead (mm)	Maximum payload		Maximum push force (N)	Positioning repeatability (mm)	Stroke (mm)
		Horizontal (kg)	Vertical (kg)			
Standard specification	RCP5W-RA7C-WA-56P-16- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	16	40	7 (*1)	±0.02	50 to 500 (in 50-mm increments)
	RCP5W-RA7C-WA-56P-8- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	8	50	15		
	RCP5W-RA7C-WA-56P-4- <input type="checkbox"/> -P3- <input type="checkbox"/> - <input type="checkbox"/>	4	70	25		
High-thrust specification	RCP5W-RA7C-WA-56SP-4- <input type="checkbox"/> -P4- <input type="checkbox"/> - <input type="checkbox"/> -B	4	-	45		

Legend Stroke Cable length Options

(*1) 5kg for disabled high-output setting.

Stroke and Maximum Speed (unit: mm/s)

Lead (mm)	High-output setting	50 (mm)		100 ~ 500 (in 50-mm increments)	
		Enabled	Disabled	Enabled	Disabled
16	Enabled	500 [450<300>]	560<400>	[450<300>]	
	Disabled		420<350>		
8	Enabled	340<280>	[300<250>]		
	Disabled		210<210>		
4	Enabled	170<140>	[150<125>]		
	Disabled		140<110>		
4 (High-thrust)	Enabled		<80>	<80>	
	Disabled				

*The values in <> apply when the actuator is used vertically.
*The values in [] apply when the actuator is used at an environmental temperature of 5°C or below.

Cable length

Type	Cable symbol
Standard type	P (1m)
	S (3m)
	M (5m)
Special length	X06 (6m) ~ X10 (10m)
	X11 (11m) ~ X15 (15m)
	X16 (16m) ~ X20 (20m)
	R01 (1m) ~ R03 (3m)
Robot cable	R04 (4m) ~ R05 (5m)
	R06 (6m) ~ R10 (10m)
	R11 (11m) ~ R15 (15m)
	R16 (16m) ~ R20 (20m)

Options

Name	Option code	See page
Cable exit from the left side face	A1	P4 (or refer to the RCP5 rod type manual)
Cable exit from the right side face	A3	
Cable exit from the top face	AT	
Brake	B	
With flange	FL	
With foot bracket	FT	
Non-motor side specification	NM	

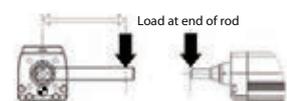
*The high-thrust specification comes standard with a brake.

Actuator Specifications

Item	Description
Drive system	Ball screw ø12mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Rod	ø25 stainless steel pipe
Non-rotating accuracy of rod (*1)	±0 deg
Allowable load/allowable torque at end of rod	Refer to page 15 (or to the RCP5 rod type manual)
Lost offset distance at end of rod	100mm or less
Protective structure	IP67
Ambient operating temperature, humidity	0 to 40°C, 85% RH or less (Non-condensing)

(*1) Rod's angular displacement in rotational direction with no applied load is shown.

Offset distance at end of rod (100mm or less)



Dimensional Drawings

CAD drawings can be downloaded from the website.

www.robotcylinder.de

2/3D CAD

■ Cable Exit Direction Option

Exit from the left side face

Option code: **A1**

Exit from the top

Option code: **AT**

Exit from the right side face

Option code: **A3**

■ Materials of Key Components

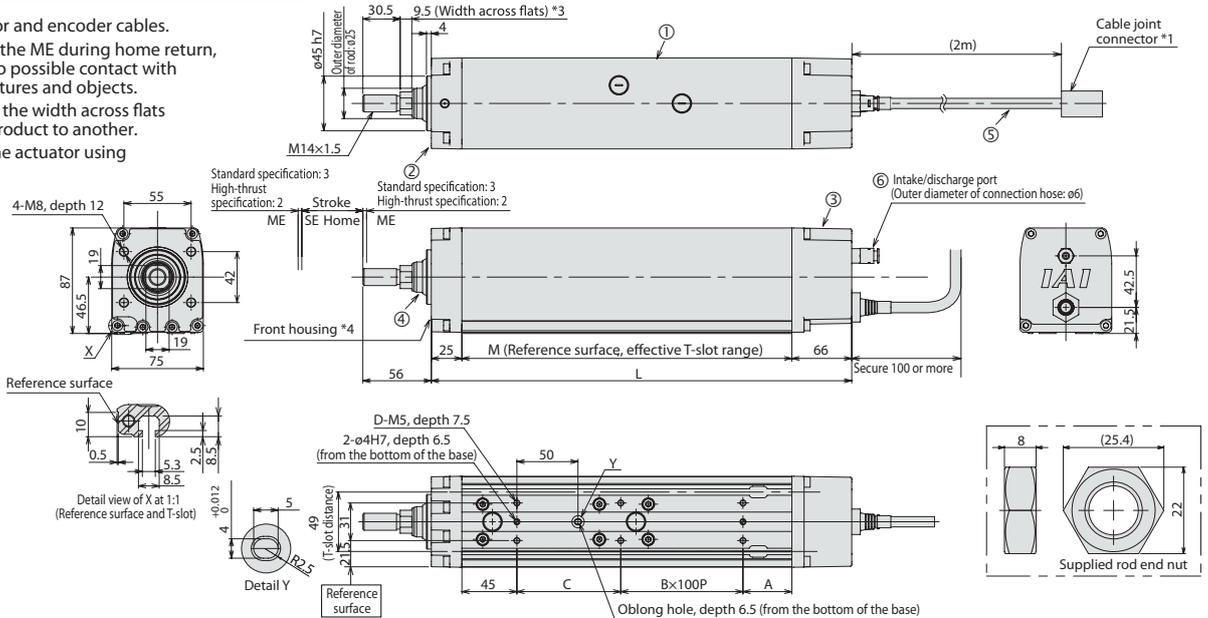
① Frame	Aluminum extrusion material (A6063SS-T5 or equivalent) with white alumite coating
② Front bracket	Aluminum die-cast
③ Rear cover	Aluminum die-cast
④ Rod	Stainless steel pipe (SUS304 or equivalent), polished + hard chrome plated
⑤ Actuator cable	Polyvinyl chloride (PVC)
⑥ Intake/exhaust port	Polyphenylene sulfide (PPS)

*1 Connect the motor and encoder cables.

*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures and objects.

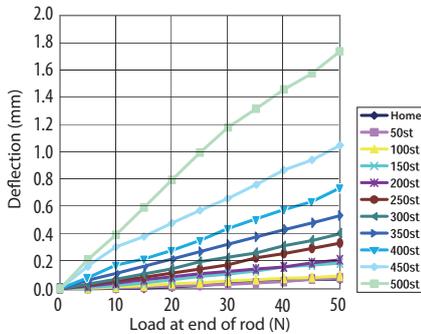
*3 The orientation of the width across flats varies from one product to another.

*4 When installing the actuator using the front housing or flange, make sure the actuator does not receive any external force.



■ Rod Deflection of RCP5W-RA7C (Reference Values)

(The graph below plots deflection as measured by installing the actuator vertically and applying a force to the rod from one side.)



■ Dimensions and Mass by Stroke

Stroke	50	100	150	200	250	300	350	400	450	500	
L	Without brake	361	411	461	511	561	611	661	711	761	801
	With brake (*)	416	466	516	566	616	666	716	766	816	866
	Without brake	40	40	40	40	40	40	40	40	40	40
A	Without brake	40	40	40	40	40	40	40	40	40	40
	With brake (*)	95	95	95	95	95	95	95	95	95	95
	Without brake	1	1	2	2	3	3	4	4	5	5
B	1	1	2	2	3	3	4	4	5	5	
C	85	135	85	135	85	135	85	135	85	135	
D	6	6	8	8	10	10	12	12	14	14	
M	Without brake	270	320	370	420	470	520	570	620	670	720
	With brake (*)	325	375	425	475	525	575	625	675	725	775
Allowable static load at end of rod (N)	Load offset 0 mm	112.7	91.5	76.7	65.7	57.2	50.4	44.8	40.2	36.2	32.7
	Load offset 100 mm	49.0	37.4	29.9	24.5	20.4	17.1	14.5	12.3	10.3	8.6
Allowable static torque at end of rod (N·m)	Load offset 0 mm	11.4	9.3	7.9	6.8	6.0	5.4	4.9	4.5	4.1	3.8
	Load offset 100 mm	3.9	3.1	2.5	2.1	1.8	1.5	1.3	1.1	1.0	0.8
Allowable dynamic torque at end of rod (N·m)	Load offset 0 mm	5.7	6.2	6.7	7.3	7.8	8.3	8.8	9.3	9.8	10.3
	Load offset 100 mm	6.5	7.0	7.5	8.0	8.5	9.1	9.6	10.1	10.6	11.1

(*) The dimensions of the high-thrust specification include the brake.

Applicable Controllers

The RCP5W series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Model number	Max. number of controlled axes	Maximum number of positioning points	Input power	Reference page
Positioner type (High-output specification)		PCON-CA-56PWAI-①-2-0	1	512 points	DC24V	Refer to the PCON catalog.
Pulse train type (High-output specification)		PCON-CA-56PWAI-PL②-2-0		-		
Field network type (High-output specification)		PCON-CA-56PWAI-③-0-0		768 points		
Solenoid valve multi-axis type (PIO specification)		MSEP-④-⑤-⑥-⑦-⑧-⑨-⑩-⑪-⑫-⑬-⑭-⑮-⑯-⑰-⑱-⑲-⑳	C: 8 (4 when high-output enabled) LC: 6 (3 when high-output enabled)	3 points	Single-phase AC 100V~230V	Refer to the MSEP catalog.
Positioner multi-axis type (Field network specification)		MSEP-④-⑤-⑥-⑦-⑧-⑨-⑩-⑪-⑫-⑬-⑭-⑮-⑯-⑰-⑱-⑲-⑳		256 points		
Program control multi-axis safety category type		MSEL-PG-1-56PWAI-①-2-4	4	30000 points	Single-phase AC 100V~230V	Refer to the MSEL catalog.
Program control multi-axis safety category type (w/ network board)		MSEL-PG-1-56PWAI-③-0-4				
Positioner high-thrust type (High-output specification)		PCON-CFA-56SPWAI-①-2-0	1	512 points	DC24V	Refer to the PCON catalog.
Pulse train high-thrust type (High-output specification)		PCON-CFA-56SPWAI-PL②-2-0		-		
Field network high-thrust type (High-output specification)		PCON-CFA-56SPWAI-③-0-0		768 points		

*PCON-CFA controller for high-thrust type actuator RCP5W-RA7C-WA-56SP. *Above MSEL models are for single-axis specification. *The high output enabled operation is only available when the „High-output setting spec“ is selected in the MSEP-④/LC. *① I/O type (NP/PN) *② Number of axes *③ Field network specification code *④ C or LC *⑤ N (NPN specification) or P (PNP specification) code *⑥ P (standard specification) or SP (high-thrust specification) code

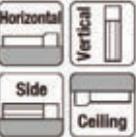
RCP5W-RA8C

RoboCylinder Splash-proof rod type
24-V Pulse motor

Actuator width: 88 mm

Model Specification Items	RCP5W — RA8C — WA — 60P — <input type="checkbox"/>
	Series — Type — Encoder type — Motor type — Lead — Stroke — Applicable controller — Cable length — Options
	WA: Battery-less absolute specification 60P: Pulse motor, size 60 <input type="checkbox"/> 20: 20mm 10: 10mm 5: 5mm 50: 50mm 700: 700mm (every 50-mm) P4: PCON-CFA N: None P: 1m S: 3m M: 5m X <input type="checkbox"/> <input type="checkbox"/> : Specified length R <input type="checkbox"/> <input type="checkbox"/> : Robot cable
	Refer to the option list below.

Radial Load Applicable



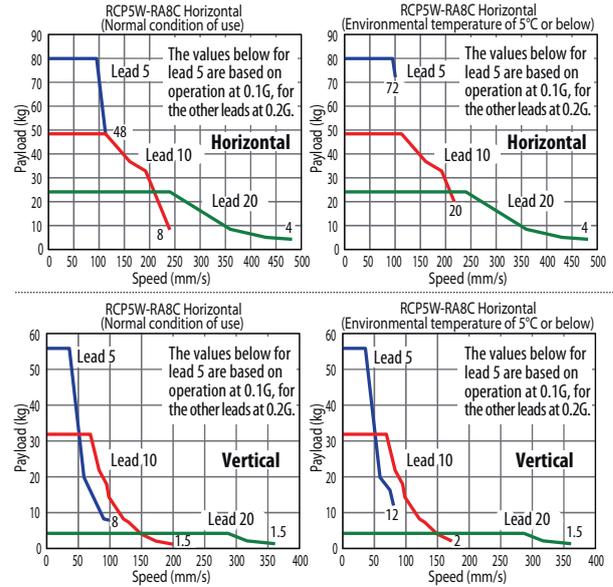
* Depending on the model, there may be some limitations to using the vertical mount position.



- POINT**
Notes on selection
- (1) The maximum payload is the value when operated horizontally and vertically at 0.1G for lead 5 and 0.2G for lead 10 and lead 20. Note that raising the acceleration causes the payload to drop.
 - (2) Please note that the RA8C requires a dedicated controller (PCON-CFA).
 - (3) The horizontal payload is calculated by assuming that an external guide is also used.
 - (4) The cable joint connector is not splash-proof, so install the connector in a location where it will not come in contact with water.

Correlation Diagrams of Speed and Payload

Due to its pulse motor characteristics, the RCP5 series provides lower payload at higher speed. Check the tables below to see if the desired speed and payload can be achieved.



Actuator Specifications

Leads and Payloads

Model number	Lead (mm)	Maximum payload		Max. push force (N)	Stroke (mm)
		Horizontal (kg)	Vertical (kg)		
RCP5W-RA8C-WA-60P-20-①-P4-②-③	20	24	4	500	50 to 700 (in 50-mm increments)
RCP5W-RA8C-WA-60P-10-①-P4-②-③	10	48	32	1000	
RCP5W-RA8C-WA-60P-5-①-P4-②-③	5	80	56	2000	

Legend ① Stroke ② Cable length ③ Options

Stroke and Maximum Speed (unit: mm/s)

Lead (mm)	50 (mm)	100 (mm)	150 ~ 400 (mm)	450 (mm)	500 (mm)	550 (mm)	600 (mm)	650 (mm)	700 (mm)
20	280	405 <360>	480 <360>	440 <360>	360	320	280	240	220
10	240 <200>		220 <200>		180 <175>	160	140	120	110
5	120 <100>		110 <100>		90 <75>	80 <75>	70	60	55

*The values in <> apply when the actuator is used vertically.

*The values in [] apply when the actuator is used at an environmental temperature of 5°C or below.

Cable length

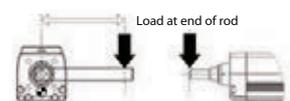
Type	Cable symbol
Standard type	P (1m)
	S (3m)
	M (5m)
Special length	X06 (6m) ~ X10 (10m)
	X11 (11m) ~ X15 (15m)
	X16 (16m) ~ X20 (20m)
Robot cable	R01 (1m) ~ R03 (3m)
	R04 (4m) ~ R05 (5m)
	R06 (6m) ~ R10 (10m)
	R11 (11m) ~ R15 (15m)
	R16 (16m) ~ R20 (20m)

Actuator Specifications

Item	Description
Drive system	Ball screw ø16mm, rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Rod	ø40 aluminum drawn tube
Non-rotating accuracy of rod (*1)	±0 deg
Allowable load/allowable torque at end of rod	Refer to page 16 (or to the RCP5 rod type manual)
Lost offset distance at end of rod	100mm or less
Protective structure	IP65
Ambient operating temperature, humidity	0 to 40°C, 85% RH or less (Non-condensing)

(*1) Rod's angular displacement in rotational direction with no applied load is shown.

Offset distance at end of rod (100mm or less)



Name	Option code	See page
Brake	B	P4
With flange	FL	(or refer to the RCP5 rod type manual)
Non-motor side specification	NM	

Dimensional Drawings

CAD drawings can be downloaded from the website.

www.robotcylinder.de

2/3D CAD

*1 Connect the motor and encoder cables.
*3 The orientation of the width across flats varies from one product to another.

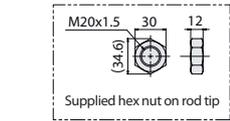
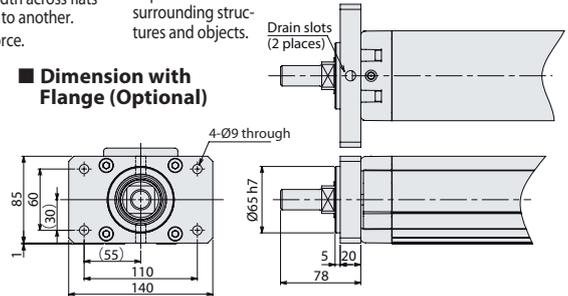
*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures and objects.

*4 When installing the actuator using the front housing or flange, make sure the actuator does not receive any external force.

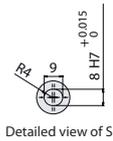
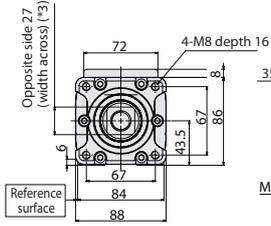
Materials of Key Components

① Frame	Aluminum extrusion material (A6N015S-T5 or equivalent) with white alumite coating
② Base	Aluminum extrusion material (A6N015S-T5 or equivalent) with white alumite coating
③ Front bracket	Aluminum die-cast
④ Rear bracket	Aluminum die-cast
⑤ Rear cover	Aluminum die-cast
⑥ Motor cover	Aluminum extrusion material (A6063SS-T5 or equivalent) with white alumite coating
⑦ Rod	Aluminum drawn tube (A6063TD-T83 or equivalent), polished + hard alumite coating
⑧ Actuator cable	Polyvinyl chloride (PVC)
⑨ Intake/exhaust port	Polyphenylene sulfide (PPS)

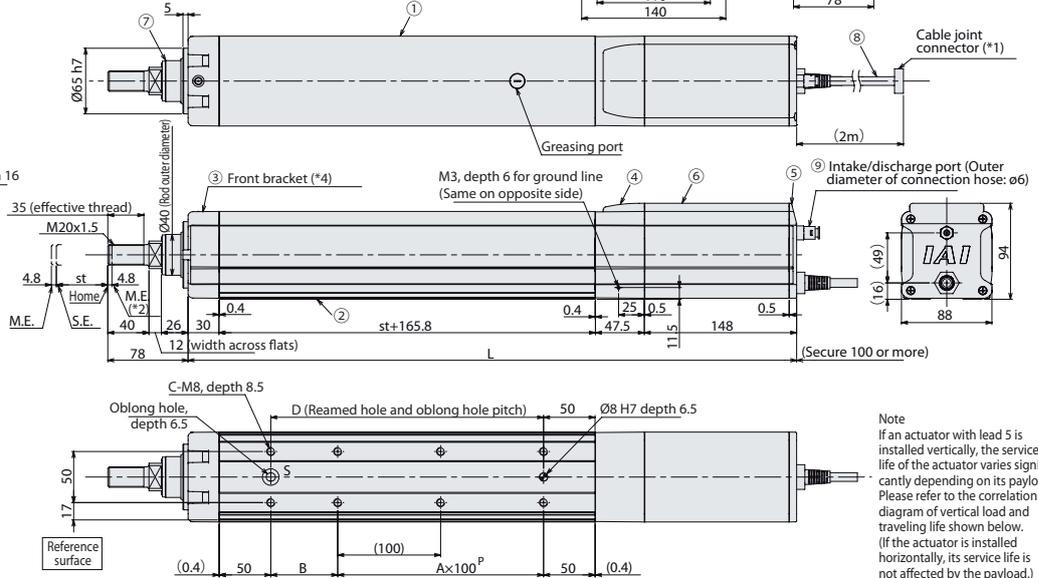
Dimension with Flange (Optional)



Supplied hex nut on rod tip

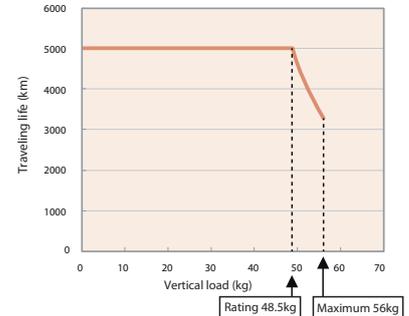
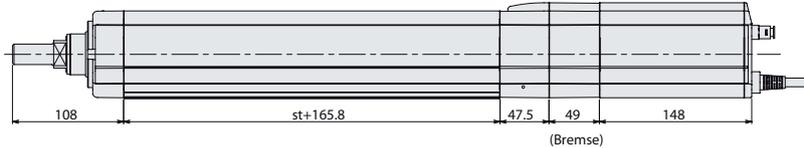


Detailed view of S



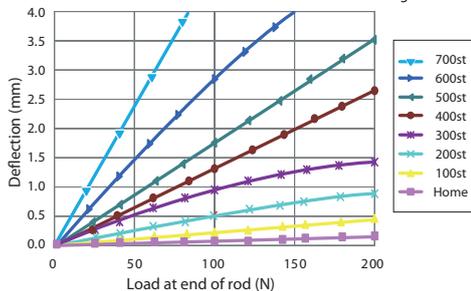
Note
If an actuator with lead 5 is installed vertically, the service life of the actuator varies significantly depending on its payload. Please refer to the correlation diagram of vertical load and traveling life shown below. (If the actuator is installed horizontally, its service life is not affected by the payload.)

Dimensions with Brake (Optional)



Rod Deflection of RCP5W-RA8C (Reference Values)

(The graph below shows the measurements of how much a horizontally installed rod would deflect when a load is applied to the end of the rod. The measured deflection include the deflection due to the weight of the rod.)



Dimensions and Mass by Stroke

Stroke	Stroke														
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	
L	Without brake	441.3	491.3	541.3	591.3	641.3	691.3	741.3	791.3	841.3	891.3	941.3	991.3	1041.3	1091.3
	With brake	490.3	540.3	590.3	640.3	690.3	740.3	790.3	840.3	890.3	940.3	990.3	1040.3	1090.3	1140.3
A	0	1	1	2	2	3	3	4	4	5	5	6	6	7	
B	115	65	115	65	115	65	115	65	115	65	115	65	115	65	
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	
D	115	165	215	265	315	365	415	465	515	565	615	665	715	765	
Allowable static load at end of rod (N)	180	150.3	128.9	112.7	99.9	89.7	81.3	74.3	68.3	63.1	58.6	54.6	51.1	47.9	
	Load offset 0mm	73.6	60.3	51.0	44.1	38.7	34.3	30.7	27.7	25.2	23.0	21.1	19.4	17.8	16.5
Allowable dynamic load at end of rod (N)	57.0	48.6	42.5	37.8	33.8	30.5	27.6	25.2	23.1	21.2	19.5	18.1	16.7	15.5	
	Load offset 100mm	57.0	48.6	42.5	37.8	33.8	30.5	27.6	25.2	23.1	21.2	19.5	18.1	16.7	15.5
Allowable static torque at end of rod (Nm)	18.1	15.2	13.0	11.4	10.2	9.2	8.4	7.7	7.1	6.6	6.1	5.8	5.4	5.1	
	5.7	4.9	4.3	3.8	3.4	3.0	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.5	
Mass (kg)	Without brake	7.6	8.1	8.5	8.9	9.4	9.8	10.2	10.7	11.1	11.5	11.9	12.4	12.8	13.2
	With brake	8.8	9.2	9.6	10.1	10.5	10.9	11.4	11.8	12.2	12.6	13.1	13.5	13.9	14.4

Applicable Controllers

The RCP5W series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Model number	Maximum number of positioning points	Input power	Reference page
Positioner type		PCON-CFA-60PWAI-NP-2-0 PCON-CFA-60PWAI-PN-2-0	512 points	DC24V	Refer to the PCON catalog.
Pulse-train type		PCON-CFA-60PWAI-PLN-2-0 PCON-CFA-60PWAI-PLP-2-0	—		
Field network type		PCON-CFA-60PWAI-①-0-0	768 points		

*① Field network specification code (DV, CC, PR, CN, PRT, EC, EP)

RCP5W-RA10C

RoboCylinder
24-V Pulse motor

Splash-proof rod type

Actuator width: 108 mm

Model Specification Items

RCP5W — **RA10C** — **WA** — **86P** —

Encoder type — Motor type — Lead — Stroke —

P4 —

Cable length — Options

WA: Battery-less absolute specification
86P: Pulse motor, size 86

10: 10mm
5: 5mm
2.5: 2.5mm

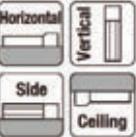
50: 50mm
800: 800mm (every 50-mm)

P4: PCON-CFA

N: None
P: 1m
S: 3m
M: 5m
X: Specified length
R: Robot cable

Refer to the option list below.

Radial Load Applicable



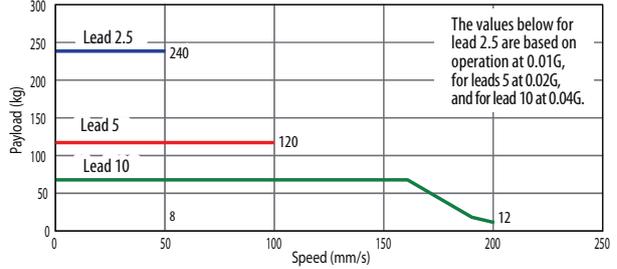
* Depending on the model, there may be some limitations to using the vertical mount position.



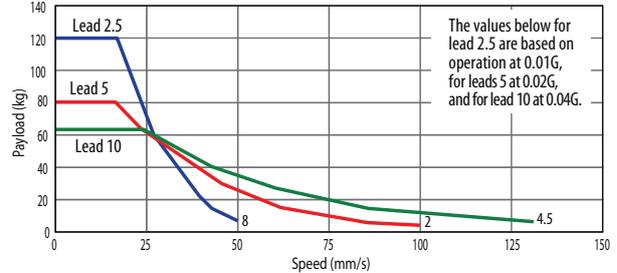
- (1) The maximum payload is the value when operated horizontally and vertically at 0.01G for lead 2.5, 0.02G for lead 5, and 0.04G for lead 10. Note that raising the acceleration causes the payload to drop.
- (2) Please note that the RA10C requires a dedicated controller (PCON-CFA).
- (3) The horizontal payload is calculated by assuming that an external guide is also used.
- (4) The cable joint connector is not splash-proof, so install the connector in a location where it will not come in contact with water.

Correlation Diagrams of Speed and Payload

RCP5W-RA10C Horizontal



RCP5W-RA10C Vertical



Actuator Specifications

Leads and Payloads

Model number	Lead (mm)	Maximum payload		Max. push force (N)	Stroke (mm)
		Horizontal (kg)	Vertical (kg)		
RCP5W-RA10C-WA-86P-10-①-P4-②-③	10	64	64	1500	50 to 800 (in 50-mm increments)
RCP5W-RA10C-WA-86P-5-①-P4-②-③	5	120	80	3000	
RCP5W-RA10C-WA-86P-2.5-①-P4-②-③	2.5	240	120	6000	

Legend ① Stroke ② Cable length ③ Options

Stroke and Maximum Speed (unit: mm/s)

Lead (mm)	50 (mm)	100 (mm)	150 ~ 400 (mm)	450 (mm)	500 (mm)	550 (mm)	600 (mm)	650 (mm)	700 (mm)	750 (mm)	800 (mm)
10	117	167	200			180			160	140	120
<130>											
5	83	100			90	80	70	60	55	50	45
2.5	50							45	40	35	30

*The values in <> apply when the actuator is used vertically.

Cable length

Type	Cable symbol
Standard type	P (1m)
	S (3m)
	M (5m)
Special length	X06 (6m) ~ X10 (10m)
	X11 (11m) ~ X15 (15m)
	X16 (16m) ~ X20 (20m)
Robot cable	R01 (1m) ~ R03 (3m)
	R04 (4m) ~ R05 (5m)
	R06 (6m) ~ R10 (10m)
	R11 (11m) ~ R15 (15m)
	R16 (16m) ~ R20 (20m)

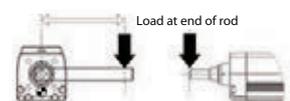
Name	Option code	See page
Brake	B	P4
With flange	FL	(or refer to the RCP5 rod type manual)
Non-motor side specification	NM	

Actuator Specifications

Item	Description
Drive system	Ball screw Ø20mm (Lead 2.5/10mm), Ø16mm (Lead 5mm), rolled C10
Positioning repeatability	±0.02mm
Lost motion	0.1mm or less
Rod	Ø40 aluminum drawn tube
Non-rotating accuracy of rod (*1)	±0 deg
Allowable load/allowable torque at end of rod	Refer to page 16 (or to the RCP5 rod type manual)
Lost offset distance at end of rod	100mm or less
Protective structure	IP65
Ambient operating temperature, humidity	0 to 40°C, 85% RH or less (Non-condensing)

(*1) Rod's angular displacement in rotational direction with no applied load is shown.

Offset distance at end of rod (100mm or less)



Dimensional Drawings

CAD drawings can be downloaded from the website.

www.robotcylinder.de



*1 Connect the motor and encoder cables.

*3 The orientation of the width across flats varies from one product to another.

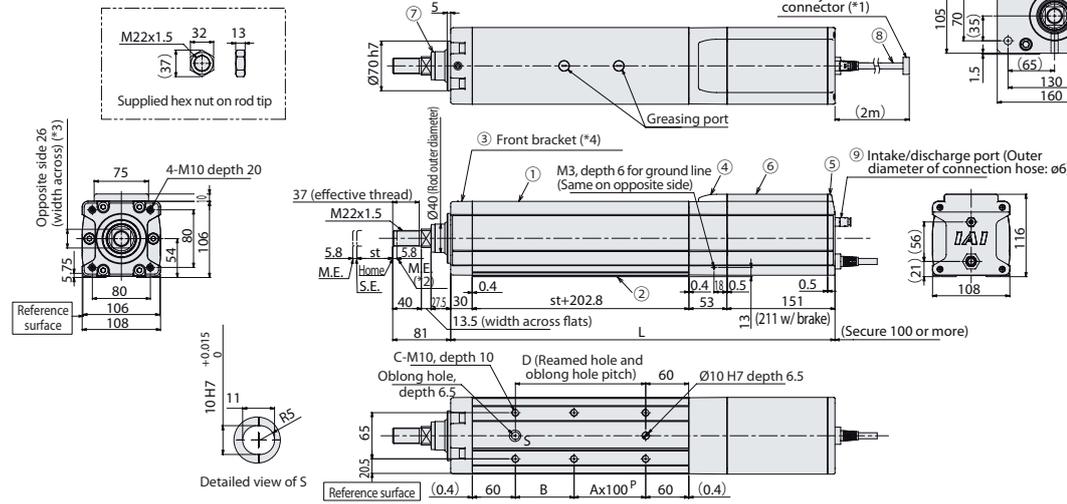
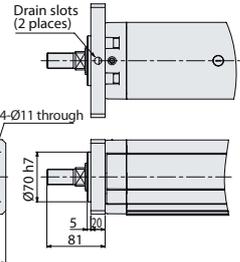
*2 The rod moves to the ME during home return, so pay attention to possible contact with surrounding structures and objects.

*4 When installing the actuator using the front housing or flange, make sure the actuator does not receive any external force.

Materials of Key Components

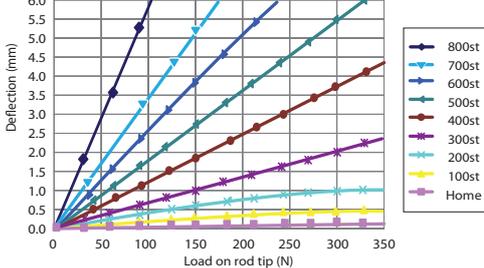
①	Frame	Aluminum extrusion material (A6N01SS-T5 or equivalent) with white alumite coating
②	Base	Aluminum extrusion material (A6N01SS-T5 or equivalent) with white alumite coating
③	Front bracket	Aluminum die-cast
④	Rear bracket	Aluminum die-cast
⑤	Rear cover	Aluminum die-cast
⑥	Motor cover	Aluminum extrusion material (A6063SS-T5 or equivalent) with white alumite coating
⑦	Rod	Aluminum drawn tube (A6063TD-T83 or equivalent), polished + hard alumite coating
⑧	Actuator cable	Polyvinyl chloride (PVC)
⑨	Intake/exhaust port	Polyphenylene sulfide (PPS)

Dimension with Flange (Optional)



Rod Deflection of RCP5W-RA10C (Reference Values)

(The graph below shows the measurements of how much a horizontally installed rod would deflect when a load is applied to the end of the rod. The measured deflection includes the deflection due to the weight of the rod.)



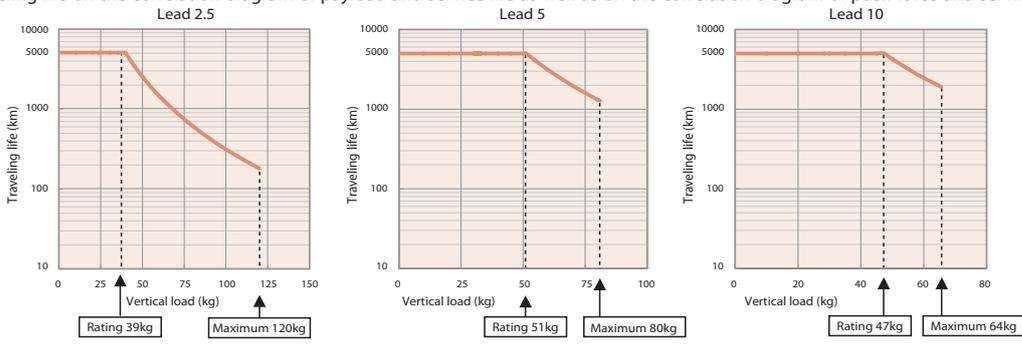
Dimensions and Mass by Stroke

Stroke	L	Stroke															
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Without brake	486.8	536.8	586.8	636.8	686.8	736.8	786.8	836.8	886.8	936.8	986.8	1036.8	1086.8	1136.8	1186.8	1236.8	
	546.8	596.8	646.8	696.8	746.8	796.8	846.8	896.8	946.8	996.8	1046.8	1096.8	1146.8	1196.8	1246.8	1296.8	
A	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	
B	132	82	132	82	132	82	132	82	132	82	132	82	132	82	132	82	
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	
D	132	182	232	282	332	382	432	482	532	582	632	682	732	782	832	882	
Allowable static load on rod tip (N)	316.9	268.4	232.6	205.1	183.4	165.7	151.0	138.6	128.1	119.0	111.0	103.9	97.7	92.1	87.0	82.5	
	119.1	99.1	84.7	73.8	65.3	58.5	52.8	48.1	44.0	40.5	37.5	34.8	32.4	30.2	28.3	26.5	
Allowable dynamic load on rod tip (N)	100.7	85.9	74.9	66.3	59.3	53.6	48.8	44.7	41.2	38.1	35.4	32.9	30.8	28.8	27.0	25.4	
	31.8	27.0	23.4	20.7	18.5	16.8	15.3	14.1	13.1	12.2	11.4	10.7	10.1	9.6	9.1	8.6	
Allowable static torque on rod tip (N·m)	10.1	8.6	7.5	6.6	5.9	5.4	4.9	4.5	4.1	3.8	3.5	3.3	3.1	2.9	2.7	2.5	
	12.5	13.2	13.9	14.6	15.3	16	16.7	17.4	18.1	18.8	19.5	20.2	20.9	21.6	22.3	23	
Mass (kg)	14.1	14.8	15.5	16.2	16.9	17.6	18.3	19	19.7	20.4	21.1	21.8	22.5	23.2	23.9	24.6	

Correlation Diagrams of Vertical Load and Traveling Life

Since the RCP5W-RA10C has a greater maximum thrust than other types, its service life varies significantly depending on the payload and push force applied when the actuator is installed vertically. When selecting an appropriate type from the correlation diagram of speed and payload or correlation diagram of push force and current-limiting value, check its traveling life on the correlation diagram of payload and service life as well as on the correlation diagram of push force and service life.

Note
The rated value represents the maximum value at a traveling life of 5000km. The greatest value is the maximum value at which the actuator can operate. Take note that, if an actuator is operated beyond its rating, its service life will drop as shown by the applicable graph on the right.



Applicable Controllers

The RCP5W series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Model number	Maximum number of positioning points	Input power	Reference page
Positioner type		PCON-CFA-86PWAI-NP-2-0 PCON-CFA-86PWAI-PN-2-0	512 points	DC24V	Refer to the PCON catalog.
Pulse-train type		PCON-CFA-86PWAI-PLN-2-0 PCON-CFA-86PWAI-PLP-2-0	—		
Field network type		PCON-CFA-86PWAI-①-0-0	768 points		

*① Field network specification code (DV, CC, PR, CN, PRT, EC, EP)